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ACQUISITION REFORM
WHY? WHAT? IS IT WORKING?

A Research Paper

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Contents

	<i>Page</i>
DISCLAIMER	ii
PREFACE	v
ABSTRACT	vi
INTRODUCTION.....	1
Background	1
Methodology.....	2
ACQUISITION—THE PROBLEMS	4
Introduction	4
As the Threat Goes, So Goes the Money	5
The Dichotomy: Reduce Price and Reduce Quantities	6
Do the Contractors Still Want Uncle Sam?	6
It Takes So Long, Its Obsolete Before Its Deployed.....	7
Rules and Regulations for the Rules and Regulations.....	8
Incentives? What Incentives?.....	9
For the Contractor.....	9
For the Military	9
Stable Funding Eludes DOD.....	10
Conclusion	10
ACQUISITION REFORM—THE INITIATIVES	12
Introduction	12
Reforms: Where They Have Been - Where They Are Going	13
A Culture Change	14
Mil-Specs Are Out—Performance Specs Are In	15
It’s Faster with FASStA	16
Small Item Procurement	16
Large Item Procurement	16
Cost as an Independent Variable, CAIV	17
Conclusion	18
REFORM INITIATIVES—ARE THEY WORKING?.....	21
Introduction	21

The Philosophy	22
Manpower - The SPO Workforce	22
Relationship with the Contractor - The Four Commandments	23
A Rolling Down-Select	24
The Contract, The Incentives, The Warranty	26
It's the Little Things that Count	28
It's All in the Packaging	29
Like a Good Suit, It Has to be Tailored.....	30
Conclusion	31
 WHAT'S NEXT FOR ACQUISITION REFORM?	 33
Introduction	33
Not Everybody is on This Reform Train	34
Some Would Like to Derail the Train	35
Don't You Dare Take Away Our Lack of Discipline.....	36
Conclusion?	37
 RECOMMENDATIONS & CONCLUSION	 38
Program Directors—Not Everybody Qualifies	38
Empowerment—Decentralized or Derailed.....	39
Know Thy Enemy—Know Thy Self	40
Conclusion	40
 APPENDIX A: JDAM—HOW REFORMS MADE A DIFFERENCE.....	 42
 BIBLIOGRAPHY	 44

Preface

As we endeavor to avoid the mistakes of the past and meet tomorrow's threats, our efforts will be critically reviewed by future generations and our shortfalls will be no less delicately examined than we are doing with past generations. Our work will be placed under a microscope, dissected, and critiqued. Our foolishness will be indignantly mocked as can only be done by the *wise* of future generations. But that should not discourage us from endeavoring to advance our profession. This paper is only a minuscule part of the responsibility each generation has to make continuous improvements. Perhaps it will never be read and will be forever lost in the black hole of research papers. But the knowledge I have accumulated in writing this paper and my application of the principles learned is a contribution I can make to my service and my country. During my attempt at making a contribution to the advancement of knowledge, I received encouragement, understanding and support from my wife (Kathy) and children (Tom and Lisa). My research advisor, Major Denean Rivera, provided the wisdom of this generation and demonstrated the power of a sense of humor. But I owe the most to the adventuresome leaders who *got out of the box* and boldly revolutionized military acquisition. At great personal risk, they stepped forward, accepted the responsibility, and battled the this-is-the-way-we've-always-done-it enemy. They are the heroes of today. May their fight for continuous improvement characterize future generations.

Abstract

National defense has been and continues to be a major commitment of the United States. However, with the demise of the Soviet Union, came a reevaluation of the military size and capability necessary for the national defense. With the perceived reduced threat came reduced budgets. This resulted in the military having to determine a proper balance between readiness and modernization. To prepare for tomorrow's threat, modernization is essential.

However, modernization is also expensive. The acquisition of new weapon systems is time consuming, expensive and often plagued with performance difficulties as technology is pushed to advance weapon capability. Repeated attempts to procure systems faster, better, and cheaper have failed. However, the budget cuts of the 1990s have forced drastic measures. Acquisition reform could more aptly be named acquisition revolution as the measures being taken are truly revolutionary.

This paper looks at some of the circumstances and problems that led to the acquisition reform movement. It looks at some of the reform initiatives taken, briefly examines why the changes were significant, and discusses anticipated benefits. Finally, the implementation of acquisition reform initiatives and their effects, as implemented by the Joint Direct Attack Munition (JDAM) System Program Office, are examined.

Chapter 1

Introduction

Background

In a democratic society, where the government is supported and run by the people, there will always be debate over how resources are distributed for the common good. For the United States, this includes providing for a strong national defense. While the American people have placed a high priority on establishing and maintaining a military capable of protecting U.S. interests throughout the world, they also expect this capability to be purchased in the most economical manner. This requires balancing the resources available between providing for an adequate military and providing for other government institutions. Determining this balance is a dynamic and uncertain process, since the U.S. may have little control over a threat requiring an immediate change in military capability. For example, the surprise attack on Pearl Harbor greatly increased the need for additional military capacity, while 50 years later the demise of the Soviet Union seemingly reduced the threat to U.S. interests. Adding to the dilemma is the acknowledgment of a wider scope of threats. National defense must consider high technology national opponents and low technology terrorists. Add to this the U.S. inclination to minimize collateral damage and minimize casualties, and the balancing act between budget, threat and new weapons

becomes complicated.¹ This dynamic adds uncertainty to determining the necessary military capacity, since erring with too little military capability risks U.S. vital interests.

Despite this environment of uncertainty, the taxpayer still expects the proper military capacity to be economically acquired. This requires having the right troop strength ready to wage war and supplying them with the right weapons and equipment to defeat any threat. Enemy advancements in technology mean more sophisticated weapons, which increase the threat to the U.S. One way the U.S. can address this threat is to procure weapons that out-perform those of potential adversaries. This means a constant endeavor to advance weapon technology at a pace that keeps ahead of the enemy. However, this pursuit of new technology is expensive and not necessarily decisive, since the enemy is also in quest of technological superiority. The acquisition of new weapon systems is necessary to maintain the technological advantage, but with it comes the responsibility to procure weapons that meet performance expectations in a cost efficient manner.² It is this acquisition challenge that this paper addresses. Specifically, it outlines some of the acquisition problems the U.S. has experienced while trying to counter the enemy threat by acquiring more advanced weaponry. It looks at some of the initiatives taken to remedy those problems. Finally, it looks at the results of implementing some of those initiatives in a specific weapon development and procurement program.

Methodology

The acquisition process is complex and multi-faceted. This paper looks at only a few aspects of the system. First, some of the more common (perhaps notorious) problems with the acquisition process will be noted. By looking at some of the problems, the

reasons for reform will become more apparent. In the past, as problems surfaced, regulatory measures were taken to correct them. However, sizable budget cuts of recent years drove the system to take more drastic measures in reforming the acquisition system. Some of these measures, known as reform initiatives, are examined. Finally, implementation of these initiatives will be investigated with particular emphasis on the results. The Joint Direct Attack Munition (JDAM) program has implemented many reform initiatives over the past few years. Sufficient time has passed that the results of many of these initiatives can be determined. Thus, this paper looks at the problems of the past, some of the steps taken to correct those problems, and finally an assessment of the impact of acquisition reform initiatives on the acquisition of the JDAM system.

Notes

¹Capt Guy Higgins, USN. "CAIV-An Important Principle of Acquisition Reform," *Program Manager*, Jan-Feb 1997, 44.

²Collie Johnson, "Secretary Preston Underscores Dramatic Changes in DOD's Acquisition Arena," *Program Manager*, Mar-Apr 1995, 36.

Chapter 2

Acquisition—The Problems

I think that when you see the programs stretched out that are already being stretched out, you are seeing one of the fundamental problems with our defense budget. And that is that we've got too many weapon systems being produced, and we're not producing any of those weapon systems—or many of them—at efficient rates. That is a colossal waste. When you take all the coffeepot scandals and all the hammers and all of those things we read about and worry about and add them all together and multiply by 10,000, you don't have the kind of waste in dollars that you do when you stretch too many weapon systems and, therefore, don't produce any of them—or many of them—at efficient rates. That is where the real waste and fat is.¹

—Senator Sam Nunn

Introduction

The acquisition of new weapon systems is a continuous process for the U.S. military. As the threats change, they are met with either modifications that add capability to current systems or with new systems that are developed and acquired. Both methods share the same acquisition challenges of minimizing cost and schedule, while maximizing system performance. It is these three indicators (cost, schedule, and performance) that have traditionally been used to measure how well a new capability is being procured. Unfortunately, the acquisition of weapon systems has been plagued with cost overruns and lengthy delays in development and procurement time. All too often, despite more money and time, a system does not perform up to the expectations of the military user. Breaching

cost, schedule, or performance has a host of negative impacts. A breach of cost means the taxpayer foregoes an opportunity cost to procure other government services or to reduce the tax liability. But, the most likely outcome is that the military must trade-off a lower priority system to fund the cost overruns. A schedule delay could allow the enemy to surpass the U.S. in weapon technology, leaving the U.S. military at a disadvantage should the enemy decide to strike. A less serious, though more likely result, is that advances in technology will surpass production and fielding of a weapon system, resulting in a new, but technically obsolete system being fielded. A short-fall in system performance means that U.S. forces may not have the capacity to counter the current or anticipated enemy threat with the latest technology. The sober result of this means more men and women will die in pursuit of protecting U.S. interests. This chapter will look at some of the actions and circumstances that have made the acquisition of systems ever more challenging.

As the Threat Goes, So Goes the Money

With the demise of the Soviet Union came a reevaluation of the need for the U.S. to maintain the large military of the Cold War era. The primary survival threat to the U.S. disappeared, and the reduced threat was answered with a reduction in the military budget. From 1985 to 1995 the overall military budget dropped by more than 40 percent. Even more telling is that, during this same time, the procurement budget (for modernization of the military) was reduced by 65 percent.² The trend is expected to get worse. As a result of this budget reduction, over two million people, both in the government and the private sector lost their jobs.³ In the Air Force alone, over 200,000 active duty persons (one-third

of the active duty Air Force) were eliminated during this same time period.⁴ In September 1995, Secretary of Defense, William Perry, said that the FY96 defense budget modernization account was only one-third of what it was in FY86⁵. This presents a challenge for the military. How, in the face of reduced budgets and manning levels, does the DOD determine the right balance between the ability to meet the current threat (readiness) and the preparation to meet future threats (modernization)?

The Dichotomy: Reduce Price and Reduce Quantities

The answer is not easy, nor is it apparent. Colleen Preston, Deputy Undersecretary of Defense for Acquisition Reform said, "...our national security strategy is founded on the precept that we will maintain technological superiority rather than numerical superiority."⁶ If the U.S. remains committed to this premise, then modernization is essential. But can this happen if procurement budgets continue downward? This look to the future implies that new weapons will be procured in small quantities; though small quantity procurements have traditionally meant higher costs. The challenge includes finding a way to reduce per unit costs while also reducing total quantities, or to change our mindset away from unit cost.

Do the Contractors Still Want Uncle Sam?

Reduced defense budgets have impacted the ability of the U.S. military to obtain the technological superiority so critical to our security strategy. As defense spending decreases, the opportunities for defense contractors is likewise decreased. This means they are redirecting their focus to the commercial sector, where the majority of technical development is taking place and more promising markets exist. Thirty years ago DOD

bought two-thirds of the computers and semiconductors produced in the U.S. Today, DOD accounts for less than five percent of that market.⁷ Contractors are redirecting their technological capabilities away from military equipment, applying this technology to commercial equipment, and marketing their products world-wide. Not only does this reduce the number of contractors remaining in the defense arena (reducing the anticipated benefits from competition), but it makes technology, that is easily converted into military applications, available throughout the world.⁸ For example, global positioning system technology, a key military capability, is becoming exploited for commercial markets.

It Takes So Long, Its Obsolete Before Its Deployed

Budget cuts are not the only threats to technological superiority. Lengthy acquisition cycles often makes technology obsolete by the time the system gets into the hands of the military user. For example, information systems technology is moving at such a fast pace, that a system just eighteen months old is considered obsolete. Since obsolescence jeopardizes technical and military superiority, acquisition cycle time must be reduced.⁹ However, the current development time for a new system averages from ten to fifteen years, assuring an outdated system reaches the user.¹⁰ There are other hazards that result from the lengthy time from concept development to initial deployment. The obvious problem is that usually a lengthy acquisition time adds cost, but no value. Also, when the user assesses the threat and determines the requirements, he must forecast what the threat will be ten or more years into the future. By having to forecast this far out, his requirements become a guess. Therefore, even if the system is successfully developed to perform to the government-directed specifications, the predicted threat may not be

applicable at the time the system is fielded.¹¹ Whether due to technical obsolescence of the system or obsolescence of the threat, military effectiveness is reduced as the time it takes to acquire a system increases.

Rules and Regulations for the Rules and Regulations

Government regulations have been targeted as responsible for increasing the very costs they attempted to control. The government has accumulated an exhaustive amount of regulations that add to the cost of weapon systems. The DOD procurement community employs some 450,000 persons, who use over 30,000 pages of regulations issued by 79 different offices.¹² These regulations are intended to guard the taxpayers' dollars, while procuring systems that will meet the users' needs. However, these regulations are responsible for the government paying an 18 percent premium on its purchases due to the additional costs placed on the contractor as a result of them.¹³ As an example, between 1984 and 1986 the Congress introduced 390 bills related to improving the defense acquisition process. In addition to this, the DOD added its own new directives.¹⁴ The regulation most responsible for this additional cost is Mil-Q-9858, Quality Assurance Standard. Why? Because the contractor does not use this standard in his commercial practices. The second most costly regulation is the Truth in Negotiations Act (TINA), because it requires the contractor to maintain an accounting system based on the cost of every product. Since this is not the way a commercial firm tracks costs, a separate cost accounting system must be put in place by the contractor solely to meet government requirements. The government has equated knowledge of the specific costs of each product with a fair and reasonable price. This regulation in no way guarantees an efficient

operation. The government has mistakenly convinced itself that the TINA guarantees a fair and reasonable price.¹⁵ Many regulations are adding costs, but there is little or no discernible added value.

Incentives? What Incentives?

For the Contractor

The government has built-in the wrong incentives to motivate the contractor to reduce the cost of a weapon system. On many contracts, profit is computed as a percentage of cost. The more a system costs, the more profit for the contractor. Also, the cost-based profit structure discourages the contractor from modernizing his plant and equipment, since this would lead to more efficient operations, reducing production costs, and subsequently lowering profits.¹⁶ Of course, the argument could be made that competition will encourage a contractor to modernize to keep costs down and remain competitive. However, only six percent of the defense procurement funds are expended on genuinely competitive sealed bids.¹⁷ As the number of contractors staying in the defense business declines due to a reduction in the business available, any benefit the government might realize from competition will erode. The current system does little to incentivize a contractor to improve production processes over the long term.

For the Military

Likewise, the DOD must have incentives to pursue acquisition reform. The DOD has responded to the budget reductions with personnel and equipment drawdowns, but the time will come when a stabilized force structure will need to modernize its aging equipment. In September 1995, former Secretary of Defense, William Perry, said that to

keep a healthy DOD, the cost of systems must be reduced and those savings used to modernize the military.¹⁸ However, there is no commitment from Congress to allow the military to do that. Reform will never really take root and be exploited to the maximum benefit until all parties to the procurement process are incentivized properly.

Stable Funding Eludes DOD

The DOD procurement system evolved to where it is today through noble motives. The government has a responsibility to ensure fairness and prevent fraud, waste, and abuse as it uses the taxpayer's money to provide for the national defense. Many of the products the military procures are not commercially available and some are unique to the art of war. Precautions must be taken to ensure that in a less than open market procurement situation that a fair and reasonable price is paid. The government also has a socioeconomic agenda that it promotes via the defense budget. Thus, efficiency may not always be the primary motive in the purchase of a system or parts of a system.¹⁹ This results in a yearly review and often yearly perturbations to the defense budget. Funding stability, or lack of stability, from year to year keeps procurement officials and contractors guessing as to how to plan for the future. This uncertainty adds cost to the procurement of weapons since changing funding levels during production adds to the contractor's costs, which are passed on to the government.²⁰

Conclusion

While this is not an exhaustive identification of the problems the current acquisition system is experiencing, it does illustrate some problems acquisition reform should address. The current system got to where it is because people responded to the circumstances of

their time. When defense budgets were large and the threat more apparent and foreboding, the most pressing concern was not efficiency. Circumstances today allow the DOD the opportunity to examine and change procurement practices and procedures. With the absence of an immediate threat to U.S. sovereignty, defense officials can devote attention to repairing the acquisition system. The challenge to do this is considerable, as the acquisition culture must be redirected and led into a new era.

Notes

¹J. Ronald Fox, *The Defense Management Challenge - Weapons Acquisition*, (Boston, Mass, Harvard Business School Press, 1988), 66.

²Colleen Preston, "DOD Must Re-engineer Its Procurement System Now." *Defense Issues*, Vol. 10, Number 24, 1.

³Jacques Gansler, *Defense Conversion*, (The MIT Press, Cambridge, Massachusetts, 1996), x.

⁴"Air Force Personnel Strength," *Air Force Magazine*, May 1996, 40.

⁵William Perry, "Building A Ready, Flexible, Responsive Force." *Defense Issues*, Vol. 10, Number 91, 1.

⁶Colleen Preston, 1.

⁷Andrea Garcia, "Dr. Kaminski Delivers Keynote Address," *Program Manager*, Nov-Dec 1994, 17.

⁸Colleen Preston, 2

⁹*Ibid.*, 1.

¹⁰"A Focused Approach to Affordable Weapon Systems," *Program Manager*, Mar-Apr 1995, 49.

¹¹J. Ronald Fox, 28-9.

¹²Jacques Gansler, 19.

¹³Colleen Preston, 4.

¹⁴J. Ronald Fox, 37.

¹⁵Colleen Preston, 4.

¹⁶J. Ronald Fox, 38-9.

¹⁷Gary Hart, *America Can Win*, (Adler & Adler Publishers, Maryland, 1986), 205.

¹⁸William Perry, 2.

¹⁹Colleen Preston, 2.

²⁰J. Ronald Fox, 38.

Chapter 3

Acquisition Reform—The Initiatives

The primary mission of the acquisition system is to meet warfighter needs. We must never forget that meeting the customer's needs is paramount.¹ We in DOD are at that crisis stage. We simply cannot continue to conduct business the way we have in the past. We won't have the people to do it; we don't have the money to do it; and every dollar that we spend on infrastructure is a dollar that we lose in terms of a person out there in the field with the proper equipment to do their job....above all, we cannot lose sight of the fact that the acquisition system is not an end in itself—that it was created to serve a purpose; to meet the war fighters' needs.

—Colleen Preston
DOD Must Re-engineer Its Procurement System

It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institutions and merely lukewarm defenders in those who would gain by the new ones.

—Niccolo Machiavelli, 1513
The Prince,

Introduction

The opportunity to dramatically change the DOD acquisition system spawned from defense budget cuts occurring after the demise of the Soviet Union. Numerous efforts and recommendations were made in the decades prior, but little was done to really change the process used to acquire weapon systems. The budget cuts brought with them a reality that

if the military is to modernize, it must revolutionize the way it procures new systems. Thus, it was more a matter of survival than a quest for efficiency that launched the latest acquisition reform movement. The interdependency of the reform initiatives preclude precise dissection of their effects. That is, the impact of a single initiative cannot be precisely determined, since these initiatives are not one-dimensional. Rather, one must look at the initiatives as a system or a process and reserve evaluation for the whole rather than for an individual initiative. This chapter will briefly look at some of the reform initiatives that have been implemented. The aggregate effects on one program, Joint Direct Attack Munition (JDAM), will be examined in Chapter Four.

Reforms: Where They Have Been - Where They Are Going

The initiatives of the reform movement were a departure from the specific and often restrictive regulations of the past. Previous reform initiatives such as the Hoover Commission in 1955; the Fitzhugh Commission in 1969; the Commission on Government Procurement in 1972; the Carlucci Initiatives in 1981; the Packard Commission in 1986; and the Defense Management Report in 1989 suggested ways to improve the acquisition system, but each effort added more complex and confining regulations.² The newest reform initiatives depart from the past in that many regulations are removed and replaced with guiding principles that not only grant room for creative thinking, but encourage, if not demand, it.³ But to abruptly transition from the security of rules to guiding principles requires a wholesale change to the acquisition culture.

A Culture Change

The biggest challenge to acquisition reform was (and continues to be) changing the acquisition culture. While not a reform initiative per se, changing the culture is essential to the success of the reform movement. According to Dr. Kaminski, Under Secretary of Defense for Acquisition and Technology, the foundation of reform necessitates changing the culture. People must be empowered to explore better, faster, and more cost effective ways of doing business. Dr. Kaminski observed a significant difference between classified and unclassified programs in their overall effectiveness in acquiring new systems. By organizing all program offices to mirror the streamlined classified programs, the number of persons required to staff a program office is reduced and decisions are made faster. As with the classified programs, innovative and creative contracts could be pursued, including incentives for the contractors.⁴ Darleen Druyun, Principal Deputy Assistant Secretary (Acquisition) indicates that it will take people with a “pioneering spirit” to implement innovative ideas.⁵ This pioneering spirit manifested itself by reducing manning levels in system program offices (SPOs). The Air Force formalized this initiative via Under Secretary of the Air Force for Acquisition (SAF/AQ) Lightning Bolt #3⁶ which charges a SPO to develop a manpower model using the tenets established in the management of classified programs.⁷ This not only makes for a more responsive SPO, but it also has a side benefit of minimizing the impact of manpower reductions. While this one step will not change the culture, it is a start. This single measure sends the signal to the workforce that business will be anything but usual. Due to reduced manpower, some of the unnecessary work previously done will no longer be performed. The remainder of this

chapter identifies some of those measures designed to change the culture, and more importantly, attitudes.

Mil-Specs Are Out—Performance Specs Are In

Reformers recognized the need to relieve the DOD from laws and regulations that prevented contractors from using commercial business processes such as activity based cost accounting and international quality assurance standards (e.g. ISO-9000).⁸ In June 1994, the Secretary of Defense issued a memorandum requiring the use of performance specifications rather than mil-specs. Mil-specs can only be used if a waiver is approved by the appropriate milestone decision authority.⁹ In addition, SAF/AQ Lightning Bolt #4 cancels all Air Force Materiel Command (AFMC) level acquisition policies and Federal Acquisition Regulation supplements.¹⁰ These actions are expected to reduce costs (both time and money). This will eliminate the need for the contractor to set up separate facilities or systems to comply with mil-specs. Contractors will be able to produce products for the military using the same processes they use for their commercial work, assuring a more cost efficient operation.¹¹ In effect, the government will stop telling the contractor how to do his job. Acquisition reformers recognized the benefits to be gained by giving the contractor only a performance specification. That is, tell the contractor only what the product needs to do, and let him determine how to build it to perform to those parameters.¹²

It's Faster with FASStA

Small Item Procurement

As was indicated in Chapter One, the longer it takes to acquire a system, the more likely costs will increase and technical obsolescence will plague it by the time it is fielded. Thus, reducing the time from concept development to deployment was a goal of acquisition reform. The Federal Acquisition Streamlining Act increases the small purchase threshold from \$25,000 to \$100,000.¹³ This simplifies procedures and reduces the time to get on contract for 99 percent of contract actions, which account for only 16 percent of total procurement dollars. Not only does this simplify and speed up the purchase, but it frees up highly trained contracting personnel to work the one percent of the contracts that consume 84 percent of the procurement budget.¹⁴ For those purchases under \$25,000, government personnel can use a government credit card to purchase items at a local store.¹⁵ This approach to small purchase items is modeled after commercial practices. It allows the government to save dollars and time in acquiring items commercially available. As workforce drawdowns continue, this becomes even more important. Likewise, the purchase of large items must also undergo a similar revolution.

Large Item Procurement

Since many of the large purchase items are not necessarily commercial off-the-shelf items, but rather large development items, the acquisition process is more complicated. Reformers sought ways to incorporate commercial buying practices into development and production programs. The use of commercial practices was difficult for the government to embrace. In an attempt to adopt a streamlined, commercial practices approach, the

proposed regulation, prepared by DOD, was over 200 pages of small, single-spaced print.¹⁶ Old habits are hard to break. However, major changes were made in the cost accounting requirements imposed by the government. A commercial buyer is concerned with the price he has to pay, not with a vendor's costs. The government is shifting toward this commercial approach. Considerable cost savings are expected, since one of the biggest cost drivers is the government's requirement to maintain a separate cost accounting system for each item. This is a non-value added activity to the contractor and to the government. As will be shown in Chapter Four, removing this accounting requirement can be an incentive for the contractor to keep the price down.

Cost as an Independent Variable, CAIV

Traditionally, as a new system was developed, unexpected circumstances would arise, requiring more money. This was not unusual, or unexpected, especially when new systems were pushing the state-of-the-art in technology. (Inventing on schedule and within budget was required.) Since inventors and inventions are notorious for exceeding estimated schedules and costs, they both grew to unacceptable proportions. In the past, all three measures (cost, schedule, and performance) were allowed to vary in an effort to find the optimal level for each. This elaborate and complicated management scheme yielded poor results. During the Cold War era, the concern for cost growth was overridden by the threat, but the post-Cold War era regards cost as the most important concern.¹⁷

Using cost as an independent variable (CAIV) essentially determines the price that government is willing to pay. If costs exceed those budgeted, the other two elements

(schedule and performance) are targeted for changes. Operating under CAIV, performance and schedule are traded off to meet the price. This requires a new method for determining the user's requirements, i.e. key performance parameters and performance specifications. Coupled with the elimination of mil-specs/mil-stds, the government and the contractor have increased latitude in trading off schedule and performance to keep the price from rising. This implies a closer working relationship between the user, the SPO and the contractor. But even more importantly, it requires the determination of realistic key performance parameters. As threats become more uncertain, the tendency to inflate performance requirements must be subdued.¹⁸ CAIV empowers a program director (within limits acceptable to the user) to manipulate schedule and performance to preclude a price increase. While the extent of a program director's latitude will vary from program to program, treating cost as an independent variable should help break the cycle of ever increasing costs.

Conclusion

While not an exhaustive look at the reform initiatives being implemented, the above list captures the essence of the reform movement. To continue to meet the needs of the warfighter despite reduced budgets and manpower, the system has to change. These reforms place more responsibility and latitude on the program manager and the contractor. They allow the government to take advantage of commercial business practices; reducing costs and accelerating schedule, while meeting performance requirements. The initiatives described in this chapter are a definite break from previous attempts to improve the acquisition process.¹⁹ The initiatives are radical enough that they will promote the cultural

change that is deemed necessary in today's environment. The need to make changes is not disputed. The budgets will no longer support business-as-usual. But will these initiatives prove successful, when past efforts have failed? The next chapter examines the implementation and effects of these initiatives on the JDAM program.

Notes

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Chapter 4

Reform Initiatives—Are They Working?

...The initiative...means an army's freedom of action as distinguished from an enforced loss of freedom. Freedom of action is the very life of an army and, once it is lost, the army is close to defeat or destruction...¹

—Mao Tse-tung

Introduction

Problems surrounding the acquisition of military weapon systems are readily visible, if only because the symptoms are so apparent. Poorly performing systems, delivered late and over-budget, generated a logjam of regulations designed to correct the ills. Although, as time would confirm, the ills continued. The basic foundation of the new reform initiatives eliminates the security of a list of rules and encourages initiative and creativity from those in the business of systems acquisition. The Joint Direct Attack Munition (JDAM) program was charged with demonstrating the effects of implementing a new way of doing business. This chapter looks at the initiatives the JDAM program took and the benefits derived from implementing these initiatives.

The JDAM program is a pilot program under the Federal Acquisition Streamlining Act (FASStA) of 1994. As such, its directors have been given the latitude to introduce new initiatives into every aspect of the acquisition process. FASStA included statutory as well as regulatory waivers that effectively unleashed the JDAM program director to

acquire the weapon system faster, better, and cheaper.² With this freedom of action, the JDAM program director led his small army on an adventure of acquisition reform. There were 132 initiatives taken by JDAM that would not or could not have been taken under a business-as-usual program. This paper looks at only a few of these initiatives, their implementation, and their effects. To gather this information, interviews were conducted with eight persons from the JDAM program office. These were with the program director, three deputy directors, the contracting officer, the financial officer, and two management support contractors.

The Philosophy

The philosophy of the JDAM acquisition is perhaps as important as all of the other initiatives combined. Without this philosophy, acquisition reform reverts back to evolution rather than the needed revolution. Mr. Oscar Soler, JDAM Program Director, likens reform to a significant emotional event. Radical thinking and radical action must accompany both. To understand JDAM, one must appreciate the basic philosophical changes this program embraced.

Manpower - The SPO Workforce

One of the ways to eliminate nonvalue-added work is to cut the SPO workforce down to where there are only enough people and time to accomplish value-added work. In accordance with the Air Force Materiel Command (AFMC) standard for an acquisition category 1D program (a major acquisition program), the JDAM SPO was authorized 150 persons in the engineering and manufacturing development (EMD) phase of the program. The JDAM program director assembled 80 persons. The key here was to take a radical

step from the beginning. As JDAM down-selected to one contractor with the award of engineering and manufacturing development (EMD) Phase II, the SPO workforce was reduced to 40 persons. It is expected that, given no new work, the SPO size will reduce to ten persons after full-rate production has started. This reduced workforce required a radical change in the way each individual approached his/her job. Integrated product teams (IPTs) became the norm, with people crossflowing across traditional functional disciplines. The emphasis turned from individual performance to team performance. This was radical change, especially to those who measured themselves against what they had done in previous programs. For example, with fewer SPO people, supervisors found themselves with more program responsibility, but with fewer persons to supervise. Persons who could not adjust to the changes were replaced.³

This smaller workforce adopted a teamwork relationship with the contractors also (discussed in-depth later). By establishing common goals, the government/contractor IPTs embarked on a new era of cooperation. This relationship eliminated the need for contract data items and program reviews. Problems were addressed and decisions made by the IPTs when issues surfaced. This prevented problems from compounding because IPTs did not wait to address them at the traditional program reviews. Thus, the manpower needs for both government and contractor were reduced. The cost of hosting reviews and delivering data items was eliminated. The accelerated decision making saved time and money.⁴

Relationship with the Contractor - The Four Commandments

Rule #1: The contractor is responsible for his design.

Rule #2: The contractor is responsible for his business decisions.

Rule #3: Government IPT participation is advisory only.

Rule #4: If you want to break Rule #3, see Rule #1.⁵

These four rules capture Mr. Soler's philosophy on relationships with contractors. Using these rules assumes the use of performance specifications in a contract. The rules necessitate strong leadership on the part of both the government and the contractor. Government program managers must resist the temptation to direct changes to a contractor's design. Likewise, if a contractor decides to make a change in his design, even if suggested by a government team member, the contractor must view this as his business decision. Recall, the contractor must deliver a product that meets certain performance specifications. By entering into a contract, he has agreed to satisfy the user's key performance parameters. If a design change is required, the contractor does not have to submit a change proposal and consume time waiting for government approval. It is his business decision to make the change. Additionally, the government team is charged with finding ways to continue to reduce costs, accelerate schedule and improve performance. As the contractor accepts more responsibility and latitude, and the government/contractor IPTs mature, the process becomes streamlined.

A Rolling Down-Select

JDAM entered EMD Phase I with two contractors competing for a winner-take-all award of EMD Phase II. A traditional dilemma for a government source selection authority (SSA) is that evaluators rate Contractor A's design superior to Contractor B's (though B's design is adequate), but B offers the better price. The SSA must favor either

price or design. JDAM eliminated this dilemma by implementing perhaps the most radical reform initiative in its history.⁶

At the beginning of Phase I, the government established two program teams, each identifying with one of the competing contractors. Each government team joined with a contractor, establishing a contractor/government team competing with another contractor/government team. The competition was real. The government teams located in separate spaces, information was treated as source selection sensitive, and each government team was charged with making his contractor the winner. A third government team was established to take the traditional government role of evaluator. The evaluation team would periodically grade the progress of the competing teams, and provide them with immediate feedback. This was a radical departure from traditional progress reviews. Traditionally, the government was not allowed to grade the contractor or give him feedback during the competitive phase of a program, resulting in the contractor continuing on an erroneous course of action and all too often a flawed design.⁷

However, with the rolling-down-select (as it became labeled), a contractor could make mid-course corrections to his approach and his design. This was not a sharing of design ideas between competitors. Some have erroneously interpreted this as technical leveling, though there was no compromise of designs between the competitors. Rather, the approach assures the government of getting two viable designs that are equal in technical merit. Thus, the SSA no longer has to strike a compromise between cost and design. Both JDAM contractors proposed designs that were judged technically equal, though very different. The government was so familiar and confident with both designs that technical proposals were omitted from the down-select. Submission of technical

proposals would have been of no value. Thus, the contractors saved money by not having to prepare formal technical proposals, the government saved money by not having to evaluate them, and the SSA accomplished the job much faster. Since the only discriminator was price, each contractor submitted a maximum fifteen pages of pricing data. The lowest price won. This was a revolution in the acquisition world.⁸

The result of the rolling down-select was that the government was able to enter the next phase of the program with a design that had the confidence of both the contractor and the government. The government used competition to drive the cost down well below earlier government estimates, indicating the price was reasonable. And the price? Government estimates predicted JDAM would cost \$42,000 (FY93\$) for the 40,000th unit. However, the average cost for the first 980 units is \$14,000 (FY93\$) per unit.⁹ But, the JDAM story does not stop here. As was pointed out in Chapter Two, the reform initiatives do not act singularly; rather they have a synergistic effect. Other initiatives that affected the dramatic price reduction are examined below.

The Contract, The Incentives, The Warranty

Dramatic results were realized as a result of creative down-select measures that exploited competition. But the contract is now down to a single contractor, with no competitors on the horizon for subsequent lots. Yet the JDAM program insists the costs will stay down. How? This section will look at a few of the initiatives that kept costs down and will keep them down for the next twenty years.

When the contractor submitted his proposal for EMD Phase II, he also submitted a price curve that he agreed to for all subsequent lots of JDAM (all 87,500 units). As long

as the contractor does not exceed the price, he does not have to submit any cost and pricing data (very costly data items). Additionally, anything he can do to lower his costs, increases his profit. The contractor could theoretically make 50 percent profit and the government would not care. Why? Because JDAM got the best price the marketplace would offer. The price guarantee, however, also implies the government will procure a minimum number of units each year. Thus, the arrangement implies commitments (and incentives) for the contractor and the government. This adds stability to the contractor's production line, which allows him to focus his plant modernization plans on the long term. This means a more efficient plant, which means more profit; but it also means an even more competitive contractor for the next program. If this happens on a number of programs, the industrial base will be upgraded, offering lower prices across the board for military modernization programs.¹⁰

Traditionally, the procurement costs of a program represented only 30 percent of the life-cycle costs of a program, with 70 percent of the costs occurring in the outyears when modifications, surveillance testing, servicing and repair costs continued for as long as the system was in the inventory. Yet JDAM projects that 98 percent of the life-cycle costs of a JDAM are in the original purchase costs.¹¹ How did JDAM make such a dramatic turnaround? The answer lies in two initiatives. One is the warranty and the other in the way the JDAM will be updated or modified.

The JDAM warranty is not complicated in structure, although it was made possible as a result of the synergistic effect of many other initiatives. The warranty is for twenty years and covers everything. The cost of the warranty is \$42 per kit, or \$2.10 per year or 0.3 percent of the purchase price. This was only possible because of many other initiatives.

New concepts such as forgoing surveillance testing, improving manufacturing processes, and using commercial parts all contributed to the low-cost warranty.¹² JDAM was not a program that pushed the state-of-the-art in technology; rather it exploited existing technology. This helped keep warranty costs down because the hardware and software have been well-characterized as far as reliability and performance are concerned. The 20-year warranty also eliminates the need for a government depot maintenance facility--saving millions of dollars.

The other initiative that keeps out-year costs down is the way JDAM is upgraded. A major expense of other weapons has been the cost to upgrade the system with the latest computer software. The brains of JDAM lie in its software. Advances are constantly being made in software. Since the JDAM is never opened or removed from its original storage container until ready for use, several generations of software could have evolved before a JDAM is opened. The system tester (used to check the JDAM kit prior to use) is designed to automatically upgrade the system software to the latest version in concert with the test procedures. This means that every JDAM, regardless of year built, is of the same generation.¹³ This simplifies interfaces with aircraft, training for the user, and training for the munitions maintenance crews.

It's the Little Things that Count

The major challenge for the JDAM workforce is to continuously search for and implement new initiatives that make the acquisition of JDAM faster, better, and cheaper. Some of the initiatives are revolutionary (such as the rolling down-select), while others are more appropriately categorized as just smarter ways of doing business. But it was the

culture change JDAM leaders created that allowed all ideas to be considered. One such idea capitalized on the availability of commercial parts. The JDAM design requires twenty-four power transistors per weapon kit. Buying a mil-spec/mil-std power transistor would cost \$25 per transistor, but commercial transistors were \$4.05. Since JDAM was allowed to buy commercial transistors, on this one part, over \$500 was saved per unit. That becomes a non-trivial \$44 million for the total program.¹⁴

Electrical connectors are not unique items; nor are they complicated or high technology. Each JDAM unit requires fifty-two connectors. They are an inexpensive item that ordinarily would not have been given a second thought. But this is JDAM -- home of the reform initiatives. Each subcontractor working JDAM intended to make a separate purchase of connectors for their subcomponent. The idea to have one contractor purchase all of the connectors and furnish them to the other contractors saved seven cents per connector, or \$3.64 per JDAM. Not exactly a figure that generates a lot of excitement. But considering this savings will take place on over 87,500 units, the figure grows to \$318,500.¹⁵ Now this is not a very large part of the defense budget, nor is it even a large part of the JDAM total program budget. However, it was the synergistic effects of dozens of ideas like this that resulted in a savings (cost avoidance) of nearly \$3 billion dollars on the JDAM program.¹⁶ For acquisition reform to be successful, change must be encouraged, new ideas pursued. When this happened at JDAM, the culture changed.¹⁷

It's All in the Packaging

Mr. Wesley "Pete" Gunn, JDAM Production IPT Chief, illustrates another JDAM initiative that clearly reveals just how new thinking has permeated the JDAM program.

Air Force and Navy requirements for packaging the JDAM kits for storage and transportation first led to the traditional extruded aluminum container. The cost estimate for a container to hold one kit was \$1600. After a couple of design iterations, the cost was coming down; but slowly. Then, commercial practices were applied to JDAM containers. The team observed that televisions come all the way from Japan in cardboard boxes. Was there a similar application for JDAM? Cardboard would not work due to outdoor storage, but styrofoam, a vapor barrier bag and a fiberglass container would meet all of the storage and transportation requirements. The price - \$300 per kit. That computes to a program savings of nearly \$114 million. This is a direct application of treating cost as an independent variable and applying performance specifications. The key performance parameters for weapon storage and transportation were examined, an alternative packaging approach adopted, and costs were avoided.

Like a Good Suit, It Has to be Tailored

Those looking for an excuse to not implement acquisition reform will point to JDAM and claim the reforms worked because of the large quantities being purchased. But JDAM leaders are quick to point out that it is the culture change that is important. They created an atmosphere where change brought excitement rather than trepidation. Mr. Soler acknowledges many of the initiatives took advantage of the large quantity buys, but then any good strategy should be built around, and take advantage of the circumstances. Two things need to be emphasized about reform. First and foremost, it never ends. The day that leaders, managers, and team members stop looking for faster, better, and cheaper ways of doing business, will be the day acquisition reform dies. The second is that

acquisition reform must be tailored to each program. Each team member must understand and accept his/her responsibility to search for new ways to do things smarter. Mr. Soler emphasizes that “there can be no boundaries to ideas.”¹⁸ Observing what other programs have done is beneficial, but disaster looms if acquisition reform is standardized for all programs. The regulations, mil-specs, etc. are being rejected because they discouraged thinking and innovation. Beware of any efforts to make a template for acquisition reform. That is why the Air Force Lightning Bolt initiatives are guiding principles and not prescriptive rules.¹⁹ Thinking, creativity, risk taking, and change must all be welcomed for acquisition reform to really take place.

Conclusion

The JDAM story is not complete; nor will it ever be complete. The process of constantly improving, constantly looking for ways to do things faster, better, cheaper, and constantly challenging the old rules does not end. The initiatives, as implemented by JDAM, have demonstrated undisputed benefits. Perhaps enough time has not passed to conclusively declare victory for all of the JDAM initiatives, but the results thus far are impressive. (See Appendix A for a comparison of JDAM versus a traditional approach to acquisition.) As JDAM leadership emphasizes, it is the attitude of the workforce more than the particular initiatives that is most important. Mr. Soler contends that even without many of the initiatives, the opportunity to improve things is unlimited by just changing the attitude of the workforce. By directing energy toward finding ways to reduce costs and accelerate schedule, acquisition reform can deliver the promised benefits.

Notes

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Chapter 5

What's Next For Acquisition Reform?

Your organization will keep reshaping itself, shifting and flexing to fit our rapidly changing world. That's the only way it can hope to survive in this friendly competitive environment. Look for it to restructure, outsource, downsize, subcontract, and form new alliances....You're not going to like some of this. Chances are, nobody will like it all. But that is neither here nor there. Question is, will you get with the program anyhow?

—Price Pritchett

The Employee Handbook of New Work Habits for a Radically Changing World

Introduction

The JDAM program has demonstrated that significant benefits are possible with acquisition reform. They have succeeded in acquiring a new weapon system better, faster, and cheaper. Yet, the JDAM management insists acquisition reform is in its infancy. The latitude afforded the JDAM SPO as a result of being a FASStA pilot program, coupled with their successful cultural transition, demonstrated a program office can procure a system better, faster and cheaper. But if reform is in its infancy, then what additional initiatives should be pursued? And, what impediments await new initiatives? This final chapter discusses some areas of concern and problems that may be encountered as acquisition reform becomes the norm, rather than being limited to a few pilot programs.

Not Everybody is on This Reform Train

The reform initiatives implemented by JDAM deal primarily with the relationship of the SPO with the contractor and the SPO with top level SAF/AQ and DOD authorities. These reform initiatives required the cooperation of only a small number of agencies. However, a SPO interacts with many other organizations and not all of them are ready to embrace a new way of doing business. In particular, the civilian personnel system is not sensitive to the changes that must be made to ensure that acquisition reform benefits the individual as well as the user, the contractor, and the taxpayer. The current civilian promotion system links the number of people and the amount of dollars being managed to promotions. Acquisition reform is intentionally reducing both of these measures of merit. Mr. Soler expresses concern that if promotions and rewards are withheld from those in acquisition reform programs, then it will not take long for the most talented persons to avoid acquisition reform, thus undermining the most important element of acquisition reform—highly competent, motivated people.¹ Also, as reforms are adopted and SPO size decreases, the opportunity to mentor the managers and directors of tomorrow are reduced. According to LtCol McClendon, JDAM Air Force Deputy Director, as more SPOs adopt acquisition reform, the number of persons in the acquisition business will decrease, reducing the opportunities to train junior persons and cause an ever-widening experience gap.² Will this leave a void in qualified people when the current workforce retires in 15-20 years? While not a current problem, the acquisition community cannot afford to ignore the long range personnel needs of program offices. The acquisition community and the personnel system must find a way to incentivize, attract, and maintain the high level of expertise needed to operate in a changing acquisition environment.

A more pressing need is training people to manage an acquisition reform program. The pilot programs were able to carefully select individual expertise. But as reform becomes the norm, the need to train the workforce becomes imperative. As the opportunity to gain experience through long term mentoring diminishes, training takes on a more important role. However, the expertise to train people in acquisition reform does not exist at the school houses. That expertise resides in the acquisition reform SPOs. Adding to the training problem is that, in the past, functional expertise was considered critical, but as the design and performance responsibility of a system becomes the responsibility of the contractor, multi-disciplined persons are needed to manage a program. Like the personnel system, formal training is not yet prepared to meet these needs.³

Some Would Like to Derail the Train

While the success of JDAM has been welcomed by many, there are those who do not necessarily welcome it. Many view reform success as a threat to their jobs, and with justifiable concern, since acquisition reform strives to do more with fewer people. Also, there are those who are concerned that reform is eliminating processes and procedures that are essential to ensuring a system is usable over the anticipated life-cycle. For example, AFMC wants the JDAM SPO to complete a source of repair analysis plan (SORAP). Because of the design responsibility and warranty, the SORAP has no value-added, in the opinion of JDAM management (top management at SAF/AQ and DOD agree with the JDAM SPO).⁴ This is just one example of other agencies trying to impose traditional requirements on an acquisition reform program. Until the culture changes

throughout the acquisition community, this type of conflict will continue between agencies. The differences can be expected to continue until programs like JDAM have been in existence long enough to prove there is no benefit to such requests, or until the drawdowns in personnel hit these requesting agencies as hard as they have the SPOs.

Don't You Dare Take Away Our Lack of Discipline

A major key to the continued success of JDAM is funding stability. Two factors have assured JDAM of current and future stability. The first is that the program is a joint program with the Navy. As the Air Force and Navy went through their budget cycles, there was an incentive for each service to maintain its programmed funding commitment. Neither service wanted to be responsible for “letting the other service down.”⁵ Had either service compromised their funding commitments, the price would have gone up and neither service wanted responsibility for this. Second, JDAM is a pilot program with top DOD attention. The services were reluctant to take funds away from a highly visible pilot program.⁶ But as the JDAM reform initiatives are adopted by more programs, the services will be forced into becoming more disciplined with their overall budgets or be forced to pay higher prices. (Likewise, Congress must become more disciplined with its budget.) This implies a need to carefully determine the users’ needs and stay the course in procuring weapon systems. This puts more importance on the need for the Joint Requirements Oversight Council to carefully determine the integrated needs of the services. Without the commitment of stable funding, the price benefits of acquisition reform will be short-lived.

Conclusion?

The latest acquisition reform initiatives are a basic departure from those of the past. Past reforms placed more regulations and restrictions on the procurement process, with the unintended consequences of alleviating those involved of accountability and responsibility. The latest initiatives incorporate incentives (increased profits), discipline (stable funding), streamlining (no program reviews, no mil-specs), and responsibility/accountability (it is the contractor's design). But the potency of the latest reform initiatives is determined by the extent of the cultural change that accompanies them. The cultural change has just started and it will take determined leaders to fight with persistence to gain reform momentum. Unfortunately, the term reform has a negative connotation that places many on the defensive. The reforms are really vehicles that offer the opportunity to make continuous improvements in the way systems are procured. If acquisition reform is not successful, it is doubtful that tomorrow's warfighter can be supplied with the quality and quantity of equipment to adequately meet future threats. And the end-state for acquisition reform? There is no end to continuous improvement; the conclusion remains forever in the future.

Notes

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⁶Calano.

Chapter 6

Recommendations & Conclusion

Acquisition reform initiatives addressed in this paper resulted in significant improvements in acquiring the JDAM weapon system. But the results did not achieve full potential because of the limited nature of the reform movement. JDAM reform initiatives were possible, and JDAM succeeded, in part because it was new and it was a pilot program. Perhaps even more important, was the leadership and carefully selected workforce. But, despite its license to make revolutionary changes, it was not exempt from many conditions that continue to limit acquisition reform. This final chapter recommends some additional areas for reform that will proliferate JDAM successes and enable JDAM and other programs to procure systems even faster, better, and cheaper.

Program Directors—Not Everybody Qualifies

It takes a particular kind of leader to successfully change the culture and reform acquisition. With only a few pilot programs, the program directors could be carefully selected from those who had proven themselves to be unintimidated by change, energized by innovation, and savvy enough to overcome the status quo. But is this pool of leaders large enough to supply the demand of acquisition reform as it attempts to expand to all programs? If acquisition is to make a long lasting commitment to continuous

improvement, there must be a pipeline that grooms, trains, and selects the right leaders to assume program director positions. The JDAM experience demonstrated that culture change was critical to success. This was accomplished because of the attitude of the leadership. Yet, how does top management determine who has the right attitude to be a program director?

Recommendation: The acquisition community should determine the criteria it will use to select program directors. This criteria should go beyond the traditional square-filling of education credentials and work experience, and include an evaluation of creative attitude (and aptitude). The directors of successful pilot programs should be surveyed and profiled to determine the critical characteristics of successful leaders in the acquisition reform arena. The acquisition community should then develop a training/mentoring program to groom tomorrow's program directors.

Empowerment—Decentralized or Derailed

A program director is responsible for, and held accountable for, a program's success. Yet, this same director is not empowered to hire/fire, promote, reward, evaluate, or allocate training quotas for his/her workforce. For much of the workforce, this authority resides with functional organizations (e.g. engineering). These functional organizations also determine the specialty skills assigned to a SPO, yet assume no official responsibility, (or accountability) for a program's success. Thus, the work force is serving two masters who may have different goals and different criteria for rewarding the people. With a smaller workforce and with a civilian personnel system that evaluates and promotes on

criteria diametrically opposed to acquisition reform, all SPO personnel should come under the authority of the program director.

Recommendation: The acquisition community should develop a plan to transition authority over SPO personnel to the program director. Research should be conducted to determine the appropriate timing and the mechanisms required for transfer of authority.

Know Thy Enemy—Know Thy Self

To apply the JDAM acquisition approach to other programs, the proper performance parameters must be established and thoroughly understood by the SPO, the contractor and the user. This will require more coordination between organizations and more discipline in determining the requirements. The key to reducing costs and schedule, while enhancing performance, is to clearly evaluate the threat and determine the appropriate weapon performance and employment requirements. Once these requirements are determined, they must not change, since to do so usually adds unacceptable cost and time.

Recommendation: Examine the current process for assessing threats and determining weapon performance requirements. Research should be conducted to determine the impact of mission creep on weapon system acquisition and evaluate the possibility of the Joint Requirements Oversight Council overseeing a cost/benefit (and schedule/benefit) analysis of any proposed performance changes.

Conclusion

There is no doubt (for the author) that acquisition reform has improved the way weapon systems are procured. The principles behind the acquisition reform examined here are applicable for every aspect of the DOD. Every agency, from finance to base

contracting to recreation to deployment of forces, needs improvements. Until the reform fever is caught by all DOD agencies, the possibilities for better, faster, and cheaper will not be exploited to the degree possible. Meanwhile, the SPOs must continue to explore, expand and aggressively pursue reform initiatives. To say the future of readiness and modernization of the U.S. military hinges on the successful reform of acquisition is not hyperbole. Because weapon systems procurements are becoming faster, better, and cheaper, acquisition reform is a force multiplier. As budgets shrink and forces drawdown, the benefits of acquisition reform become ever more important and essential to ensuring the U.S. remains the dominant military power in the world.

Appendix A

JDAM—How Reforms Made a Difference¹

MEASURE	JDAM FY95 PB*	JDAM FY97 PB
Mil-Stds/Mil Specs Directed	87	0
Statement of Work Pages	137	2
Contract Data Requirements (CDRLs)	146	22
Warranty	5 yrs	20 yrs
Average Unit Price (40,000 units) \$14k (93\$)	\$42k (93\$)	
Program Office Manning	80	40
Proposal Page Limitation for EMD Phase II	unlimited	15 pages
Development Time	64 Mos	48 Mos
Development Costs	\$683.9M (TY\$)	\$422.5M (TY\$)
Production Time	15 yrs	10 yrs
Production Savings/Cost Avoidance	0	\$2.9B (TY\$)

Additional Comparisons

Measure	Traditional	Streamlined JDAM
DAB Documentation	20 documents	7 documents
Source Selection	3 months	6 weeks
Test	Test to Spec	Test to Ops Requirements

Bottom Line: Since Milestone I approval, JDAM increases the warranty from 5 yrs to 20 yrs (doing it better), decreased production delivery time by 60 months (doing it faster), and saved/avoided \$2.96B (TY\$) in program cost (doing it cheaper).

* Program Baseline

Notes

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